Immunological testing

- Monoclonal antibodies
- Serology
- Quantifying antigen – antibody reactions

Perspective 17.1
Monoclonal Antibodies

Serology

- Antibodies
- Antibodies detect and identify antigens

Quantifying antigen – antibody reactions

- Seroconversion or rise in titer
- Serial dilutions

Precipitation reactions

- Immunodiffusion
- Immuno-electrophoresis

Figure 17.2 - Quantitation of immunologic tests
Agglutination reactions

- Direct agglutination
- Indirect agglutination
- Hemagglutination

Direct agglutination

- Cross – linking and lattice formation
- Antibodies react with particulate antigens (red blood cells, bacteria, fungi)
- Visible clumps
- Estimate amount of antibody

Indirect agglutination

- Soluble antigen is coated onto particles (red blood cells, latex beads)
- Allow for visible clumps (agglutination)
Immunofluorescence tests
- Direct fluorescent antibody test
- Indirect fluorescent antibody test

Figure 17.7 - Agglutination reaction

Antigen – antibody assays
- Radioimmunoassay (RIA)
- Enzyme – linked immunosorbant assay (ELISA)
- Western blot

Figure 17.8 - Direct and indirect fluorescent antibody test

Radioimmunoassay (RIA)
- Competitive inhibition assay
- Measure antigen or antibody
- Ex. Measure small amounts of hormones or drugs in a clinical sample
- Ex. Measure small amounts of IgE antibody (radioallergosorbent test)

Enzyme – linked immunosorbant assay (ELISA)
- Color reaction assay
- Indirect ELISA
- Direct ELISA
Complement fixation test

- Measures the binding of complement by an antigen – antibody interaction
- Indicator system determine positive or negative reactions

Neutralization test

- Antibody bind to specific antigen (virus, toxin)
- Antibody – antigen complex prevents antigen from binding (neutralization)
Cellular immunology test

- Identification of subsets of lymphocytes
- Lymphocyte response to mitogens
- Cytotoxic T-cell function
- Cell-mediated immunity to infectious agents